

had purulent peritonitis (Hinchey III) and 12 patients had a contained abscess (Hinchey II). Of the Hinchey II and III patients it was found that 5/12 (42%) and 8/25 (32%) respectively had a persistent perforation on the subsequent histology report.

Conclusions: 42% of Hinchey II patients and 32% of Hinchey III patients will have a micro-perforation and are not suitable for non-resectional surgery. This important distinction needs to be recognised in a new classification system.

Medical Student Prize 0042 **SINGLE BUNDLE ANTERIOR CRUCIATE RECONSTRUCTION DOES NOT RESTORE NORMAL KNEE KINEMATICS AT 6 MONTHS: AN UPRIGHT MRI STUDY**

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Introduction: Abnormal knee kinematics following ACL reconstruction may exist despite a resolution of tibial laxity and functional benefit. We performed upright, load bearing, MRI scans of both knees in the sagittal plane throughout different angles of knee flexion to determine the kinematics of patients undergoing unilateral reconstruction (n=12).

Method: Scans were performed pre-operatively and at three- and six-months post-operatively. Anterior-posterior tibial laxity was determined via arthrometer and patient function by validated questionnaires before and after reconstruction.

Results: In all ACL deficient knees, the tibial plateau was anteriorly displaced and internally rotated relative to the femur when compared to the control contralateral knee, particularly in extension and early flexion (lateral compartment displacement: extension 7.9mm, p=0.002 and 30° flexion 5.1mm, p=0.004). Reconstruction restored the subluxation of the lateral tibial plateau at three months, with a resolution of anterior displacement in early flexion, but not in extension (p=0.015). At six months the reconstructed knee again showed anterior subluxation in both the lateral (extension 4.2mm, p=0.021 and 30° flexion 3.2mm, p=0.024) and medial compartments (extension, p=0.049).

Conclusion: Knee kinematics actually deteriorate from three to six months after reconstruction, this was despite laxity improvement and functional benefit in our cohort. Persistent abnormal kinematics may cause degeneration to the knee joint.

Medical Student Prize 0093 **ELECTRICAL STIMULATION ENHANCES MIGRATION AND INVASION OF BONE MARROW STEM CELLS: IMPLICATIONS FOR FRACTURE HEALING**

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Introduction: Bone marrow mesenchymal stem cells (BMMSCs) are essential in fracture healing. However, the effects of various clinical electrical stimulation (ES) waveforms on BMMSCs cellular activities is unknown.

Method: We compared Direct Current (DC), Capacitive Coupling (CC), Pulsed Electromagnetic wave (PEMF) and Degenerate Wave (DW) by stimulating human-BMMSCs for 5-days for 3-hours a day. Cytotoxicity, cell proliferation, apoptosis and cellular-kinetics were evaluated after ES. Migration and invasion were assessed using fluorescence microscopy and affected gene and protein expression were quantified.

Results: DW had the greatest proliferative and least apoptotic and cytotoxic effects compared to other waveforms and unstimulated cells (p<0.001). DC, DW and CC resulted in significantly more cells in S- and G2/M-phase (p<0.01) compared to the unstimulated BMMSCs. CC and DW caused more cells to invade collagen and showed increased MMP-2 and MT1-MMP expression (p<0.001) compared to the other waveforms and unstimulated BMMSCs. DC increased cellular migration in a scratch-wound-assay and all ES waveforms increased migration gene expression with DC having the greatest effect (p<0.01).

Conclusion: The ES waveform is vital in influencing BMMSCs cellular activities. Migration and invasion were increased by ES, which suggests that the recruitment of BMMSCs to the healing site during a fracture could be increased by ES.

Medical Student Prize 0585 **DO PREVIOUS DEXTERITY SKILLS INFLUENCE PERFORMANCE IN SINGLE INCISION LAPAROSCOPIC SURGERY (SILS)? COMPARING JOINT FORCE HARRIER PILOTS TO MEDICAL STUDENTS**

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Aims: To demonstrate whether the higher dexterity levels of Harrier pilots allow the faster acquisition of the innovative and difficult to learn Single Incision Laparoscopic Surgery (SILS) technique compared to medical students.

Methods: 8 Harrier pilots and 29 medical students undertook 4 previously validated laparoscopic tasks (bean drop, block move, bile duct cannulation and appendicectomy) on SILS and 3-port laparoscopic simulator.

Results: SILS appendicectomy task mean times: Pilots 55sec vs 170sec medical students (p=0.002 CI -184.7, -46). Pilots had smaller mean times and error rates in all other tasks (not statistically significant). Total task times: SILS: Pilots 696sec vs 963sec students. Three port laparoscopy: Pilots 418s vs 497s students.

Conclusions: The pilots' high dexterity skills may explain their better performance in both simulator tests. The advantages of laparoscopic surgery over open surgery have been widely published and SILS may provide an even greater advantage than the traditional 3 port laparoscopic surgery but it is known to be very difficult to master. The selection of trainees for their hand eye coordination and special awareness as they do in the selection of military pilots in the UK may lead to faster and higher success in the acquisition of new laparoscopic surgical skills.

Medical Student Prize 0761 **ENDOVASCULAR REPAIR OF ABDOMINAL AORTIC ANEURYSMS (AAA) OUTSIDE MANUFACTURERS INSTRUCTIONS FOR USE: INFRA-RENAL SEALING IS NOT A SAFE OPTION**

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Introduction: Current guidelines recommend EVAR use for a neck length of >15mm and angulation of <60°. We wished to assess outcome for EVAR inserted outside manufacturers 'instructions for use' (IFU).

Method: A large international EVAR registry database (EUROSTAR) was interrogated. Patients undergoing infrarenal EVAR outside IFU (neck<15mm or angulation >60°) were compared to those inside IFU. Primary endpoint was proximal type 1 endoleak. Secondary endpoints were all cause mortality, AAA related mortality, and secondary intervention.

Results: 11208 patients were reviewed. 2839 were undertaken outside IFU (25.3%); 672 had neck length <15mm and 2356 angulation of > 60°. Patients were older (P=<0.001) and had more comorbidities in the outside IFU group. Mean aneurysm diameter was 57.8mm; mean diameter for short neck aneurysms was 59.9mm and 62.6mm for angulated necks (P=0.003). The incidence of endoleak rate was 5.3% in angulated necks, 7.6% in short necks and 12.7% in aneurysms with both short and angulated necks (P<0.001). All cause mortality (P<0.001) and aneurysm related mortality were higher in the outside IFU group (P=0.008). Time to reintervention was shorter in the outside IFU group (P=0.08).

Conclusion: Endovascular repair of abdominal aortic aneurysms outside manufacturer's instructions for use is associated with an unacceptable risk of proximal type 1 endoleak.

Medical Student Prize 0765 **A COMPARISON OF A DIRECT THROMBIN INHIBITOR AGAINST ASPIRIN AS VENOUS THROMBOEMBOLISM PROPHYLAXIS IN PRIMARY TOTAL HIP REPLACEMENT USING WOUND OOOZE AS THE PRIMARY OUTCOME MEASURE**

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Aim: New guidance dictates that all primary THR patients should be prescribed a Direct Thrombin Inhibitor for VTE prophylaxis (NICE 2010). Postoperative wound ooze is associated with increased risk of infection. While little evidence suggests Direct Thrombin Inhibitors are superior to Aspirin as a VTE prophylaxis their effects on wound ooze are also